REMARKS

Claims 1-14, 24, 28-41, 51, 55-57 were rejected. Claims 1-3, 5, 7, 9-14, 29, 30, 32, 34, 36-41, 51, 56, and 57 are amended. Claims 4, 6, 8, 24, 28, 31, 33, 35, and 55 are hereby canceled. Claims 15-23, 25-27, 42-50, 52-54, 69-77, and 79-81 were previously withdrawn. Claims 58-68, 78, 82-91 were previously canceled. Claims 92 and 93 are added. No new matter is added.

Response to Arguments

Examiner is thanked for withdrawing various objections to the drawings, abstract, specification, and claims. Examiner is thanked for withdrawing various rejections under § 101 and § 112, first paragraph. Examiner's other remarks will be considered below as appropriate.

Claim Rejections 35 U.S.C. § 112

Claims 7-9, 28-41 and 51were rejected under 35 U.S.C. § 112, second paragraph for being indefinite. It is submitted that these rejections are moot in light of amendments to these claims, as well as in light of the cancellation of claim 28.

CLAIM REJECTIONS 35 U.S.C. § 103

Claims 1-14, 24, 28-41, 51, and 55-57 were rejected under 35 U.S.C. 103(a) as being unpatentable over High Performance Scalable Image Compression with EBCOT" by Taubman ("Taubman") in view of U.S. Pat. No. 5,691,770 issued to Keesman et al. ("Keesman"). Amended claim 1 recites in part:

> "wherein said calculating comprises determining a fractional number, wherein said fractional number comprises a denominator derived from at least a relationship between the overall target bit rate and a total amount of bits used to encode previously-encoded coding units of the source data according to at least the global coding order…"

In the rejection of claim 8 (now canceled), the Examiner cited Taubman figures 6a-6b, Taubman page 1160, second column, last paragraph (in Section II "Rate Distortion Optimization"), as well as Section D "Fractional Bit Planes and Scanning Order" for teaching subject matter similar to the above-quoted subject matter of amended claim 1. Figures 6a-b illustrate "[r]ate-distortion properties of (a) regular bit-plane coding, and (b) fractional bit-plane coding." (Taubman, page 1164, Fig. 6 caption.) Section D "Fractional Bit Planes and Scanning Order" further describes figure 6. In particular, Taubman, in the last paragraph in the second column of page 1164, states:

> "The dashed line in Fig. 6(a) identifies the rate-distortion curve described by modulating the quantization step size and decoding all bit-planes… The solid dots in Fig. 6(a) identify the rate and distortion associated with the end of each coding pass of a convention bit-plane coder… The solid lines in Fig. 6(a) illustrate the rate-distortion curve which one could expect to obtain by truncating the bit-stream produced by a convention bit-plane coder to an arbitrary bit-rate."

Taubmann then describes on page 1164, first full paragraph:

> "[I]f we separate the code-block samples into smaller subsets with different statistics, then it is possible to improve upon this behavior by coding the next bit-plane one subset at a time, starting with the subsets which are expected to offer the largest reduction in distortion for each extra bit in the code length. This de-interleaving of the samples into subsets with distinct statistics is the goal of fractional bit-plane coding. In the present work, there are four subsets corresponding to the four coding passes and the end of the fourth coding pass, P_4^P, marks the point at which all samples have been updated to bit-plane p. Thus the solid lines if Fig. 6(a) and (b) may be associated with this coding pass."

Nothing in the description of Figures 6(a)-(b) discloses calculating an adaptive bit rate including determining a fractional number having a "denominator derived from at least a relationship between the overall <u>target bit rate</u> and a total amount of bits used to encode all previously-encoded coding units of the source data according to at least the global coding order" as recited by claim 1.

Taubman page 1160, second column, last paragraph (in Section II "Rate Distortion Optimization") states:

> "The determination of the optimal truncation points n_i^λ, for any given λ, may be performed very efficiently, based on a small amount of summary

information collected during the generation of each code-block's embedded bit stream. It is clear that we have a separate minimization problem for each code-block, B_i. A simple algorithm to find the truncation point n_i^{λ}, which minimizes $(D_i^{n_i^{\lambda}} + \lambda R_i^{n_i^{\lambda}})$, is as follows:

- initialize $n_i^{\lambda} = 0$;
- for $j = 1, 2, 3, \ldots$

  set $\Delta R_i^j = R_i^j - R_i^{n_i^{\lambda}}$ and $\Delta D_i^j = D_i^{n_i^{\lambda}} - D_i^j$;

  if $\Delta D_i^j / \Delta R_i^j > \lambda$ then update $n_i^j = j$."

Examiner essentially alleges that λ in the above equations is the "threshold" of claim 1 (although Keesman is cited for teaching an adaptive threshold). Even though there is a division operation in the above equations, it does not result in the "fractional number" of amended claim 1. In particular, none of the rates ("*R*") in the Taubman equations above comprise "the overall target bit rate of said encoding". Thus, for at least this reason, Taubman fails to teach at least a fractional number having a "denominator derived from at least a relationship between the overall target bit rate and a total amount of bits used to encode all previously-encoded coding units of the source data according to at least the global coding order" as recited by claim 1.

Keesman also fails to teach or suggest the above-quoted subject matter of claim 1. The quoted language from Keesman (allegedly teaching an "adaptive threshold") states, in part, "a yet more accurate RD curve can be estimated if … the actual MPEG encoder adaptively varies the quantization step size from (macro-)block to (macro-)block." This does not teach or suggest the above-quoted language of amended claim 1.

For at least these reasons, Applicants submit that the combination of Taubman and Keesman fails to teach or suggest all elements of claim 1, and that claim 1 is nonobvious and therefore patentable over the combination.

Claims 2-3, 5, 7, and 9-14 depend from claim 1 incorporating its limitations. Thus, for at least the same reasons as above, Applicants respectfully submit that these claims are also patentable over the combination.

New claims 92 and 93 are added and recite subject matter generally similar to claim 1. And claims 29, 30, 32, 34, 36-41, and 51 depend from claim 92, and claims 56 and 57 depend from claim 93. Thus, for at least the same reasons as with claim 1 discussed above,

Applicants respectfully submit that claims 29, 30, 32, 34, 36-41, 51, 56, 57, 92, and 93 are also patentable over the combination.

Claims 4, 6, 8, 24, 31, 33, 35, and 55 are canceled, rendering their rejections moot.

CONCLUSION

Applicants submit that all pending claims are in condition for allowance. Early issuance of the Notice of Allowance is respectfully requested. If the Examiner has any questions, the Examiner is invited to contact the undersigned at (503) 796-2844. Please charge any shortages and credit any overages to Deposit Account No. 500393.

Respectfully submitted,
SCHWABE, WILLIAMSON & WYATT, P.C.

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by: /Richard B. Leggett/
Richard B. Leggett
Reg. No.: 59,485

Schwabe, Williamson & Wyatt, P.C.
Pacwest Center, Suites 1600-1900
1211 SW Fifth Avenue
Portland, Oregon 97204
Telephone: 503-222-9981